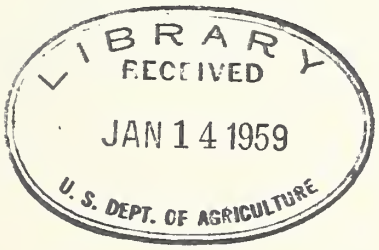
REPORT OF

NATIONAL AGRONOMY WORKSHOP

Cincinnati, Ohio

November 6-10, 1956



U. S. Department of Agriculture
Soil Conservation Service

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Washington 25, D. C.
January 25, 1957

To Service personnel:

The attached report is a summary of the National Agronomy Workshop held in Cincinnati, Ohio, November 6-10, 1956. It expresses the opinions and conclusions reached by those attending the meeting, and does not constitute Service policy.

It is hoped the report will aid in promoting a better understanding of how the Service can further strengthen the agronomic phase of our total soil and water conservation job, as well as help agronomists to perform their duties more effectively.

Full credit is given to each person attending for making the meeting a successful one. It is evident that each of the men has endeavored to be of maximum assistance to the field, and with the guidance of State Conservationists and their staffs additional improvement will be made.

B. D. Blakely
Head Agronomist

Attachment

WORKSHOP MEMBERS

Name	Title	Headquarters
Abernathy, J. K.	Ass't State Conservationist	Richmond, Va.
Aho, Donald T.	Management Agronomist	Bismarck, N. D.
Anderson, R. D.	Management Agronomist	Pueblo, Colo.
Austin, Wayne W.	Washington-Field Agronomist	Berkeley, Calif.
Bernath, Glen E.	Management Agronomist	Defiance, Ohio
Blakely, B. D.	Head Agronomist	Washington, D. C.
Craig, D. G.	Washington-Field Agronomist	Fort Worth, Texas
DeLand, Roger W.	Management Agronomist	Missoula, Montana
Dykes, J. C.	Ass't Adm. for Field Services	Washington, D. C.
Gamble, Maurice D.	Management Agronomist	Oklahoma City, Okla.
Graham, Edward H.	Director, Plant Technology Div.	Washington, D. C.
Guernsey, Walter J.	Management Agronomist	Lexington, Ky.
Jent, Clarence H.,Jr.	Management Agronomist	Columbia, Tenn.
Jones, John Paul	Washington-Field Agronomist	Upper Darby, Pa.
Kaiser, Verle G.	Management Agronomist	Spokane, Wash.
Kellogg, Charles E.	Ass't Adm. for Soil Survey	Washington, D. C.
Maddy, John	Management Agronomist	Des Moines, Iowa
Maurer, T. C.	Washington-Field Agronomist	Spartanburg, S. C.
Moore, George C.	Management Agronomist	Penn Yan, N. Y.
Nixon, W. M.	Washington-Field Agronomist	Lincoln, Neb.
Pierre, J. J.	" " "	Urbana, Ill.
Pollock, John E.	Management Agronomist	Raleigh, N. C.
Stoesz, A. D.	Head Plant Materials Tech.	Washington, D. C.
Turelle, J. W.	Washington-Field Agronomist	Lincoln, Neb.
Wallace, Mervin H.	Management Agronomist	Phoenix, Ariz.

SUMMARY OF

NATIONAL AGRONOMY WORKSHOP

CINCINNATI, OHIO

November 6-10, 1956

What we expect of agronomists: Edward H. Graham

1. Keep technically informed. Keep up-to-date with new developments, and constantly look for and develop new ideas. Self improvement through reading, writing, attending technical societies, and workshops are important.

2. Translate your knowledge and information into workable recommendations for others to use.

3. Maintain close liaison with line officers - be effective in your assistance.

4. Maintain a working relationship with agronomists in research work, and other agencies. Answers to problems are often available; others can be obtained jointly.

5. Function as a part of a technical "team" in a co-ordinated program.

6. The Service expects every agronomist to help make the agronomic phase of soil and water conservation program as expert and effective as possible.

7. Recognize that all technical phases are necessary in carrying out a complete conservation program. The agronomic phase is but one segment and must be properly coordinated into the total soil and water conservation job.

Job Standards for Management Agronomists: Discussion Leader, Tom Gardiner

Mr. Gardiner of the Washington Personnel Office explained job standards and position classification. He related to the group the extent that the Civil Service Commission and the Service work together on job classification and other personnel matters, and the good working relationships that exist between SCS and the Civil Service Commission.

Some of the important things that Mr. Gardiner pointed out were the following:

1. The job to be done classifies the grade.

2. A job description should properly answer the question "what is the job to be done?" It should give examples of the problems and be specific and it should show from whom the man gets assignments and supervision.

3. Training activities are important, but are not necessarily the significant factor in determining grade.

4. A person should know what is wanted from the job before writing the job description.

5. The mental demands of the job and the originality required are grade determining factors, particularly at GS-11 and up.

6. While the job description should be complete it should be as brief as possible. Avoid unnecessary details. Statements should be clear and concise.

7. Every employee should occasionally read his job description.

8. A good annual plan of operations is helpful in doing the job.

Several questions were raised and some recommendations were made. The more important ones were:

1. It was agreed that present Civil Service classification standards for management agronomists need to be interpreted, and redefined to conform to the present organizational pattern of the SCS. A committee composed of D. G. Craig, Donald Aho, R. D. Anderson, Glen Bernath, Clarence Jent and Verle Kaiser will work with members of the Washington Personnel Division to interpret present standards, and make recommendations for improvement.

2. It was the consensus of opinion that the Service is in need of GS-12 Management Agronomist positions. There is no intermediate step between the GS-11 and GS-13 for agronomists, while in some other technical phases an intermediate grade of GS-12 does exist.

3. Questions were raised as to "why":

   a. Some government organizations have a higher grade structure for some of the technical jobs. (Gardiner explained that where this exists there are always organizational differences.)

   b. Some technicians of some techniques are privileged to receive premium pay and to have relatively higher entrance grades and salaries. (It was explained that this is due to actions taken by the Civil Service Commission.)

It was pointed out that these "why" questions are morale questions and maybe the Service has a responsibility to inform personnel of the actual facts. The problem is probably not one of classification but rather one of acquainting personnel with opportunities in the Service and showing how people can advance in the Service.

Relationships with State staffs and specialists in other agencies: Discussion leaders--Wayne W. Austin and John P. Jones

1. The State Conservationist has the primary responsibility for the working relations with all organizations in the State as well as between various organizational levels of the Service. Technical relations are an important part of the public relations phase of the conservation program within a State. It is largely through technical relations with State colleges, experiment stations and other agencies that technical excellence of conservation work on the land is assured. Another facet of relations in the Service is the relationship that exists between technicians within the Service, including those between the line and staff in the State, and those between the various technical organizational levels of the Service. All phases of technical relations must be kept on a high level of integrity. Technicians must seek information, be sure it is properly interpreted, adapted, and used. It is important that the technician give something that is technically worthwhile to the person or organization with whom he is dealing if he is to maintain a high technical standing and integrity, and is to be one whose services is sought. Therefore, each specialist in the Service has, as an integral part of his duties, certain technical relations responsibilities regardless of his grade or the organizational level. Each technician must be on

a "par" with his counterpart in colleges, experiment stations, and other governmental agencies. Problems that need additional research or adaptation need to be brought to the attention of experiment stations through proper channels. Likewise agronomists should seek the counsel of research agronomists in adapting known research information to various sites and conditions, and assuring that there are no basic differences between research and operations.

2. There are several good ways of assisting with relations at various levels of organization within the Service, some of which serve to bring about the coordination of agency programs. One method consists of "workshops." These involve area conservationists, work unit conservationists, management agronomists, State program staff soil conservationists, and often the Washington-field agronomist. Other technicians, such as the plant materials technician, woodland conservationist, etc., often participate. These workshops consist of personnel from two or more areas where problems are similar, and may even in some instances involve parts of two or more States. Such workshops delve into "what are the problems" and "what are the best alternative solutions." "Technical guides" or "handbooks" can be prepared or revised as a result of this type of conference. Another idea used in the western group of States involves the preparation of the schedules for the Washington-field technologists. The Washington-field plant technologists as a team visit each State before the fall operations planning conference. The State Conservationist of each State calls in the area conservationists and the specialists for a State staff meeting. Each Washington-field plant technologist has a chance to discuss with each area conservationist and subject matter specialist problems in the field that need some technical help. Washington-field plant technologist can then plan his next year's trips at the best time to take care of known problems. This procedure offers a way to better coordinate the activities of the Washington-field plant technologist and the State staff.

Mr. John P. Jones gave the group some very worthwhile ideas, comments, and suggestions. The outstanding points in his discourse were as follows:

1. Staff soil conservationist and management agronomist maintain contact and working relations with agronomy departments and college specialists.

2. Washington-field agronomist assists staff soil conservationist and management agronomist to plan programs to be developed with college agronomists and may help present the problem, but follow-up and work involved may be left for the soil conservationist and management agronomist.

3. The staff soil conservationist and management agronomist should be assisted by the Washington-field agronomist with difficult problems, setting standards and specifications, organizing to give technical information, program planning, and training.

4. Washington-field agronomist needs to contact college specialists to discuss special technical problems, and to review research in progress. This is usually done with the soil conservationist or the management agronomist, but could be done without them if they are unable to participate.

5. The purpose of maintaining relations with college specialists is to correlate our recommendations with those of the college and to be sure that our work is in accord with the latest research findings.

6. There is an opportunity to develop more cooperative programs than we have had time to plan to date. With our training program, representatives of the college have collaborated in nearly all the States.

In the southeast area, college professors have been hired during the summer vacation to work with SCS men in the field. This has resulted in more conservation being included in the instruction courses at the college and serves admirably to give the professors a real basic understanding of conservation problems and treatments.

Seminars are held in many States where the field SCS people are brought together in training meetings. At these seminars the college and experiment station people review the latest information with the Soil Conservation Service people.

Field tours help to further better relationships and a better understanding of problems, of Soil Conservation Service, and college and experiment station people. This is being done in several States from time to time and is worthy of serious consideration in others. Similarly several field trips of agronomy specialists across State lines has been held.

Functional inspections: Discussion leader, B. D. Blakely

The Service's policy regarding functional inspections is outlined in Administrator's Memorandum SCS-116.

A functional inspection is defined as the inspection of a single unit of organization, results in commendation of good work and agreement on improvements to be made. They are called for by the Administrator or by the State Conservationists. In all cases a line officer or his representative should accompany the inspecting officer.

During this past year, Washington-field agronomists have made functional inspections of the agronomic phase of soil and water conservation work in a number of the States and Territories. Likewise, management agronomists have inspected the agronomic phase in work units and areas. The outlines that were used are generally acceptable to the State and Territorial conservationists.

It was agreed that we continue to review our procedures in carrying out functional inspections and make improvements wherever possible.

State and Territorial conservationists recommended that we continue to make a functional inspection in each State every three years. They also felt that functional inspections of technical phases of soil and water conservation work should be confined largely to checking on adherence to technical standards, and felt that the item of quantity should be largely confined to the program inspection.

Within the States, it would seem desirable that the program and functional inspections be combined. This has been done in several States during the past year and in all cases it was reported to have worked out quite satisfactorily.

1. Functional inspection guides or outlines should be in sufficient detail to serve as a basis for making the inspection. They should be flexible to the extent that adjustments can be made to fit individual conditions within the States and Territories.

2. Quality and quantity of agronomic work. It is important that we have the proper perspective in connection with the progress which is being made in the field. The question of balance, which involves quantity, should not be overlooked. We must be interested in the total coordinated program regardless of who is doing it. Even though the State Conservationists have recommended that "quantity" be largely confined to Program Inspections, the agronomists were of the opinion that quantity of practices applied should be considered in making inspections of the agronomic phase of the Service program in the States and Territories. The amount of practices being applied can be checked from the record and reports that are available.

3. Factual information. Factual information being used in the field should be checked for adherence to standards and specifications.

4. Follow-up. In order to do an acceptable job of follow-up, the agreed items should show the following:

(1) What is to be done.

(2) Who is to do it.

(3) When it is to be done, if specific time can be determined.

There must be a definite follow-up procedure if inspections are to be effective, and there should be letters on file indicating what follow-up actions have been taken.

Staff needs might well be recognized, but we should be careful not to get into the field of administration with respect to this item.

If changes in functional policy are needed, they should be recognized in the inspections.

It is advisable to have the State soil conservationist, management agronomists, and also a soil scientist, if possible, in on the functional inspections in the State.

The group agreed to the following recommendations:

> That program inspections, made by the States and Territories of acres and work units, include the functional inspection of the agronomic phase of soil and water conservation work, except for special situations as determined by the State and Territorial conservationists.
>
> That management agronomists participate in area inspections as a part of the combined Program and Functional Inspection made by the State in the areas he serves.
>
> That the management agronomist be furnished a copy of each combined program inspection report made in the area he serves in order that he may be informed of any items which relate to the agronomic phase of the soil and water conservation work in each area.

Work of soil scientists and agronomists in the SCS: Discussion Leader, D. G. Craig

The following material was presented to the group by Dr. Charles E. Kellogg:

> I. Our basic job in the Soil Conservation Service
>
> We want to present to farmers the best alternative combinations of practices that are available to them for economic sustained production of their soil and water resources, and to help them

make the best decisions for the use of these resources.

A. For any field or kind of soil there are nearly always several alternatives that can be used. The one the farmer should choose depends upon his skill, capital, desires, and upon the potentialities of the other parts of his farm.

B. We need to emphasize both immediate and long-time production. The combination of practices should insure the maintenance of soil productivity at an economic level, and should result in the maximum possible output in relation to the inputs of land, labor, and materials.

C. We insist that the farmer make the choice, not the technician. Only in this way can he enlarge his skill in using and evaluating technical information.

D. The alternatives should be presented as specifically as our technical knowledge permits in terms of practices, yields, and long-time effects on the soil. Ideally the farm plan should be accompanied by a budget. For either a formal budget or for the simpler vegetative budget needed on farms with livestock, someone must know or assume the yields of pastures, meadows, and field crops.

E. The alternatives must be precise, and all reasonable choices should be included. Both the farmer and the technician need a picture of the alternatives for each kind of soil on the farm, since the selection of the best one for any one soil area depends upon the possibilities of the others in the farm unit.

F. Conservation farm plans must be tailored to the farm and the farmer. We cannot ignore the farmer's financial budget. As conservationists, neither can we ignore the vegetative budget for the farm. This involves hay and pasture production, as well as yield potentials from cultivated land devoted to fruits, vegetables, and general field crops. We must recognize that the completion of a basic farm conservation plan merely brings the farmer clearly to the starting line. All sorts of agricultural conditions change and he must change his plan from year to year. Prices change, techniques change, and government programs change. So it is not simply a matter of having alterratives for him at the time of developing a basic farm plan. He needs to have these alternatives before him as long as he continues as a farm manager. This fact emphasizes completeness, accuracy, and continual revision.

II. The job in the soil survey

The Service's job in the soil survey is to supply both an immediate and long-time base to farm planning.

A. This means the development of a scientifically sound scheme of soil classification that can be practically applied. The work must be based on sound science so that it may be usable and be interpreted in terms of technical practices. If the maps are left without interpretation they have little usefulness except to the soil scientist who can make the interpretations on the spot.

B. We have a long tradition on the scientific side. Although changes are continually being made in order to bring new scientific knowledge into the classification and make use of it, changes in the interpretation are even more sphemeral.

C. There is a tendency to stress selected individual conservation practices, rather than combinations of practices for sustained production. Many of the alternatives that are presented to farmers are still rather vaguely defined in terms of both practices and yields. This makes it difficult to develop a proper financial budget. We have also presented fewer alternatives than were possible. Each of these deficiencies tends to limit the farmer's choice and to obscure the development of a farm plan with the highest possible net economic return.

D. It is an enormous job to make soil interpretations for all soils. It is not possible to carry out detailed research on each different soil area. By using all available data, in relation to the soil classification and soil map, it is possible to make predictions that apply to each kind of soil.

Careful studies of the characteristics of individual soils in relation to their effects on plant growth and combinations of farming practices furnish the basis for such predictions. Besides our basic knowledge of soil science, data may be obtained from experimental fields, long-time farm records, and from the many less formal experiences and observations made and recorded in the field. Although most of the data for interpretation in any State may originate within the State, full use must be made of data from similar kinds of soil in other States. At least the initial work must be done within

the districts or counties. In developing yield tables and practice tables, based upon the results of the research of our own soil scientists in the field during the course of the survey, the research of others, and upon the experience of farmers, an enormous amount of work is required.

To make accurate predictions about the behavior and response of the different kinds of soil to management we start with a knowledge of their characteristics and qualities. Having assembled and interpreted the results of field and laboratory research and of the experiences of qualified individuals, predictions related to soil behavior and use can be applied to similar kinds of soil wherever they occur, including the specific parts of farms and ranches.

III. Cooperation on soil survey interpretation

From about 1920 to 1934 the position was taken that it was the job of the soil survey to get the facts and the job of others to interpret these facts. As a result actually many of these surveys were not used, as only a few people besides the soil scientists could interpret the technical descriptions, and also because no one else had the responsibility for their preparation.

A. Agronomists as well as other agricultural specialists have very important contributions to make to the interpretation of the relations between the soil and the ultimate harvest. Horticulturists, foresters, agricultural engineers, civil engineers, production economists, and others are involved, but to a lesser extent in many areas.

B. In view of the size of the job and then its complexity, we expect our soil scientists to make the first approximation for interpretation of the soil classification and the soil map. First of all, he develops tables of yields of the adapted crops for all the kinds of soil under alternative combinations of practices. These results enable him to make several kinds of interpretive groupings, including groupings into capability units, subclasses, and classes. To prepare the best possible information he must have the reactions and judgments of other people who have something to contribute. He also groups soils strictly according to their characteristics as a part of the scientific correlation and as an aid in indicating the characteristics that differentiate one kind of soil from another. He also makes interpretations and groupings according to engineering properties and for other purposes.

> Perhaps no single group is more important in assisting the soil scientist than the agronomists, both in the Service and in the cooperating land-grant colleges. For them to be most effective they will need to be familiar with the significant combinations of the soil charactersitics; they will also need to be familiar with crop plants, especially with their physiological requirements.
>
> It is around the development of the tables for yields and practices, and the groupings of soils in capability units, subclasses, and classes that I think the soil scientists and agronomists can work together most directly.

Following Dr. Kellogg's presentation, the group discussed the whole problem at considerable length. It was brought out that the whole field of soil interpretation is very important to agronomists in the Service, especially as it relates to field crop management. We have the best opportunity to make the best possible use of soil survey information because we are all in the Service together.

Agronomists in the Soil Conservation Service must know the important characteristics and qualities of soils and soil interpretation and management, if we are to make maximum use of our soil survey information.

Agronomists have a responsibility in developing agronomic information in such a manner that the work unit conservationist can use soil maps for presenting alternative systems of management to the farmer and rancher.

One way is for the management agronomist and the soil survey supervisor (or party chief) to schedule some time in the field together. This might be done at the time the soil survey legend is set up for an area, or during the time regular progress inspections are being made of the soil survey work in the field. Area conservationists could assist in scheduling the management agronomist and soil survey supervisor to work with unit conservationists in the development and improvement of their technical guides.

Long-time forward schedules are maintained for the review and completion of soil surveys. The Washington-field agronomist should try to schedule his time so as to join the soil scientists in a few of these final reviews. At that time, final recommendations are made for the soil nomenclature and plans for completing the maps, the interpretations, and the reports for publication.

Where time permits, it would be helpful for the Washington-field agronomist to work with the soil correlator for interpretation, located with the principal soil correlator, in the preliminary review of representative soil survey reports. Since these reports are very tightly scheduled he will need to select ones jointly with the soil correlation staff that can be fitted into his own time schedule.

It is important that the Service and the State agricultural colleges be in close agreement on soil survey interpretation. This can best be accomplished by joint workshops and maintenance of as complete data as possible about each kind of soil. With such materials available State by State, it is then much easier to resolve differences among States and carry on successful inter-State workshops.

It is recommended that the management agronomists give as much assistance as possible to the soil scientists in the field who must prepare descriptive soil legends and soil survey reports. This can only be done effectively by advanced scheduling with the area conservationist and soil scientists. Although line officers take the main responsibility for scheduling, it is important that the staff officers point out the needs well in advance.

We recommend that State conservationists take full account of the need of joint effort among the soil scientists, agronomists, and other plant technologists in the scheduling and management of the soil survey actities with special reference to soil survey interpretation and soil survey reports.

Report of panel discussion on schedules and distribution of time, and annual plans of operations: Panel leader, R. D. Anderson
Panel - Clarence Jent, George Moore and Mervin H. Wallace

The primary basis for the panel was a discussion of questions and answers from 21 SCS management agronomists throughout the country in response to a questionnaire.

Recommendations submitted to members of the workshop and adopted were as follows:

1. Efficient operations are contingent upon the proper scheduling of time. Management agronomists should prepare and follow a schedule consistent with the needs of the work area.

2. Schedules should show time, place, and subject matter to the extent possible. Administrative assistance and concurrence should be sought in their preparation. Travel time need not be shown on schedules except where travel will require one or more days. Unless arrival times are understood, courtesy requires that notice be given to those concerned.

3. A six-month or annual schedule should be prepared and include all definitely committed dates and jobs. Short-time schedules for from one to three months should be more detailed within the framework of the longer schedule.

4. If one to two-month schedules of management agronomists are being followed satisfactorily they should not be changed by the State office or agronomist except in case of emergencies.

5. Allowing two to five days of open time in short-time schedules is a good practice as it provides flexibility and the opportunity to give help on short notice.

6. Each scheduled trip to an area by the agronomist should normally be for a one-week period including travel time. Shorter visits should be made only in cases of special assignment. At each visit to an area, the management agronomist should discuss and agree as to jobs and where he will work during his next visit.

7. Copies of the schedule should be made available to those concerned. Master schedules for a State are an effective and efficient manner of coordinating the schedules of "specialists" and informing all concerned.

8. From 60 to 75 percent of the management agronomist's time should be spent in the field. Not less than 25 percent of the time should be scheduled for office work. This office time should not be subject to re-scheduling to field work.

9. Management agronomist should assist where needed in other related vegetative and management work, especially in planning activities. However, it is believed that at least 75 percent of the management agronomist's time should be devoted to agronomy work, including activities pertaining to conservation farm planning.

10. Under the present organization of SCS, the management agronomists must become largely self-sufficient in their field. They will have to secure information from experiment stations, research centers, land-grant periodicals, bulletins, and field observation.

The Washington-field agronomist should provide general agronomy data, basic agronomic principles, new ideas and applicable information.

The management agronomist should be allowed official time for self-improvement in addition to what he can do on his own time. They should be provided the opportunity to schedule and attend important research and experiment station meetings and field days.

11. The management agronomist should prepare an annual plan of operations. It should include:

    a. Objectives.

    b. A plan of action for accomplishing these objectives.

    c. The general timing of action to be taken.

    J. C. Dykes, Assistant Administrator for Field Services, told the group that the APO should be as personal as possible. It is prepared by the individual concerned and is to be used by him.

    APO's should be simple, short and understandable, and include five or six important items that need major attention during the year.

12. Management agronomists should be invited by the State conservationist to attend at least one area conservationists' meeting quarterly. At least once a year the management agronomist should be on the program to discuss agronomic matters.

13. Consideration be given to scheduling agronomy workshops at least once every two years in order to give the management agronomists an opportunity to discuss mutual problems and keep each other informed concerning related activities.

Plant materials with respect to agronomy: Discussion leader, A. D. Stoesz

A. Present status. There are 22 field plant materials technicians and 5 Washington-field plant materials technicians. In addition, the Beltsville nursery is concerned with plant introductions on an international scale, selecting those materials that have possible value in various parts of the country. These materials are eventually evaluated at appropriate plant materials centers located in the States. There are now seven plant materials centers located in various parts of the country that are operated under cooperative agreement, and five that are operated by the Service.

Five new plant materials centers have recently been authorized. They will be located in Florida, Michigan, New Mexico, Oregon and Hawaii.

B. Plant materials in reference to agronomy.

1. The plant materials technicans must look at the job, as one of evaluating plants and supplying technical information on their culture and management in biology, agronomy, woodland conservation and range conservation.

2. The plant materials technician is not a special kind of agronomist; he must serve the other phases of plant technology as well.

3. Under plant materials policies, agronomists and other plant technologists are expected to assist plant materials technicians in:

   a. Determination of plant materials needs.

   b. Development of plans for plant materials evaluation.

   c. Appraisal of results.

Panel on development and dissemination of agronomic technical material: Panel discussion - Don Aho, Leader, Walter Guernsey, Maurice Gamble and John Maddy

The panel felt that the following types of technical agronomic material would be helpful to personnel who directly or indirectly help plan and apply agronomic measures to the land:

I. Technical standards and specifications

Agronomy standards and specifications for each major conservation resource area should include a definition of the practice, practice objectives and general adaptation or limitations with detailed specifications on how to establish and maintain the practice.

They can be broad at the State level and adjusted specifically for local areas. They should serve as a framework of recommendations for planning and application within the Service and for use by other agencies such as ACP.

Standards and specifications should be developed through committee and review systems which assure participation by all SCS field personnel concerned, and State college representatives as necessary. The management agronomist should assist with needed local adaptation and adjustments within the framework set up by the State technical guides.

II. Research, experience, field evaluations and other technical data

All field offices should be furnished with background and current technical agronomic data which will permit technicians to more fully understand the agronomic standards and specifications. This will aid in adapting or revising them to fit local conditions and needs. Such data needs to be supplied in as clear, concise, and readily filable form as possible. Various methods can be devised to serve this purpose. Two of the more effective methods in use are outlined below:

A. Agronomy handbooks

Handbooks furnish background information for field personnel on a broad area basis such as a State, with emphasis on conservation agronomy. They are for field use, where needed, by the management agronomist in cooperation with the soil conservationist on the State program staff and various representatives of the State experiment station, Extension Service, and Agricultural Research Service. They should be cleared by the Washington-field agronomist. Desirable distribution includes County Extension agents and Vo-Ag. instructors as well as SCS personnel. Plans should be made to keep the handbook up-to-date, and a record of distribution be kept in order to replace outmoded material with new data or information. This can be done by using a loose-leaf decimal page numbering system whereby material can easily be replaced. In this manner the standards and specifications are supplemented with current research, field trial or field tests, and farmer experience information in a brief, concise reference.

B. Agronomy technical notes and letters

Technical notes are for distribution to SCS field personnel from up-to-date research or from field observations and evaluations, and have been useful in States where they are used. They usually are given a State series number for filing purposes and ease of finding. When or where possible, these notes are combined into the agronomy handbook.

Agronomy letters are also used to notify the field about such things as sources of grass seed, demonstrations being held, timely application of practices or new ways to sell a practice. The material in these letters is usually of non-continuing nature, and hence they need not become a part of a permanent file series or agronomy handbook.

III. Job sheets

Job sheets are for farmer use. They consist of technical data translated into simple instruction sheets on how to do a job. They are not necessarily needed for all practices. Similarly, the need will vary from one area to another. They should never be used as a substitute for the needed discussion of a practice with a farmer. Instead, they

are used to supplement a discussion of the practice to be applied. Blanks for personalized adjustment to a particular job should be used whenever possible. Job sheets should be developed by a committee of field personnel who are dealing with the problem directly, in cooperation with the management agronomist and the soil conservationist. It is desirable to use pictures and diagrams. One title and a picture or diagram can be multilithed to serve a State in some cases, and the written material can be inserted by mimeographing to fit local conditions. A planned scheme of picture taking may be necessary in order to illustrate the different phases of a job.

IV. Meetings, seminars and workshops

Dissemination of new or unpublished technical data can be effectively done through seminar meetings. SCS, college, and ARS people can present such data to rather large groups of SCS and Extension field personnel. Summaries of this material can then be prepared for agronomy handbook or technical notes.

Preparation of sound technical recommendations or alternatives for problem areas, as well as for correlation between States, is a must. This often can be done by committees of SCS, Extension, colleges, ARS, and other interested people working together for arriving at a common set of alternatives or basic recommendations. Such procedure is essential in preparing technical guides as well as in revising them.

V. Technical articles

The assembly and interpretation of technical material for local adaptation and use in soil conservation is an important phase of the management agronomist's job. Technical articles should be prepared and do not necessarily have to be written about new or original research.

Many States have an administrative policy on approval of articles for other than local use. Within the framework of that policy the management agronomist will assist the soil conservationist on the State program staff with a review of news articles for widespread distribution within the State.

The management agronomist can be of real assistance in helping work unit and area personnel to locally inform the public on importance of agronomic measures. He can prepare skeleton articles which they can use to write local articles.

Local SCD publications are also an effective means of getting agronomic information across to SCD supervisors, farmers and others in the district.

VI. Visual aids

Slides and photographs are important in selling agronomic practices. Pictures are useful in exhibits, leaflets, job sheets and technical notes. The management agronomist is in a position where he can gather these visual aids and make them available to area and work unit personnel. Pictures and slides may be used for broad programs or may be pinpointed for intricate details for individual practices.

A number of simple demonstrations have proven very effective in explaining technical facts to individuals or groups. The better ones should be illustrated and explained in visual aid guides.

VII. Getting acceptance of technical material

The management agronomist should develop relationships in the field that create enthusiasm and thereby motivate work unit conservationists in their agronomic work. Technical data on agronomy in standards, specifications and handbooks should be developed with field personnel when possible, and they should be discussed thoroughly with field personnel for complete understanding.

An important factor in getting acceptance of technical material is the degree of respect in which the management agronomist is held. He must primarily, through self-improvement, keep himself well ahead in the field of agronomy, and at the same time maintain good relations with others in his field.

The key factor in getting agronomic measures accepted, particularly by the farmers, is in showing them the benefits to be derived. The management agronomist, in cooperation with the soil conservationist on the State staff, must help devise effective means for gathering cost-benefit data in the field.

Panel on assistance to field units, problems in establishing agronomic practices and field evaluations: Panel discussion - Verle Kaiser, Leader, John Pollock, Roger DeLand, and Glen Bernath

The committee first discussed the problems that limit the application of needed agronomic practices on the land by the farmers and ranchers.

They emphasized that much good conservation is being applied on the land by farmers and ranchers of the Nation. Work unit staffs and area technicians are giving effective help to farmers and ranchers but we need to do more. Problems that limit farmer action:

1. Problems outside control of Soil Conservation Service

   a. Acreage allotment program. Farmers who have in the past practiced sound soil conservation programs have been penalized by reduced acreage allotment for basic cash crops, as compared to those who exploited their land.

b. The current Soil Bank Program. This program is inheriting many of the drawbacks of the allotment acreage control program plus additional "loopholes."

2. Problems partially under control of Soil Conservation Service, or problems on which Soil Conservation Service has joint responsibility.

a. Sufficient factual data is not availabee for many conservation practices and problems. This includes basic research, information on the proper application, and the cost and benefits of applying the practices on the land. Two major items are cited: (1) Conservation crop rotation, and (2) conservation tillage.

b. Some fields of work, important to proper land use and treatment of land, are not clearly defined as to the responsibilities that Soil Conservation Service technicians have in those fields. Included in these are the following: (1) Soil fertility and fertilization, and (2) noxious weeds and weed control.

3. Problems wholly under control of Soil Conservation Service.

a. Farmers and ranchers need more efficient and effective help in planning and applying the needed soil and water conservation practices on their land. Reasons why they aren't getting this help:

(1) Work unit conservationists do not have sufficient understanding of the problems of soil and water conservation in the local work unit.

(2) Work unit conservationists do not have a practical technical program to offer to solve these problems including alternative methods or practices.

(3) Factual information on the cost and the benefit of conservation practices is lacking.

(4) Unit people do not have sufficient time, or have not effectively used available time, for working with farmers on agronomic problems.

(5) Unit people have not developed needed skills in working with farmers, including the skill of salesmanship.

SOLUTIONS: Two solutions to this third group of situations or problems are:

1. Employment of qualified personnel. This approach is limited by funds, availability of men, the salary structure of the Service, and other things. We call attention, however, to the disproportion of technicians newly employed who have agronomy backgrounds, in spite of the fact that by far the greatest amount of the Service work is on crop and pasture land. We further point out the long-range danger to the Service unless there is constant inflow of new and younger men into the organization with accompanying new ideas and fresh enthusiasm.

2. The second solution to the situation or problem is limited only by ourselves and the action we take. It is training the unit and personnel we have now.

Recognizing that this training job is the responsibility of the area conservationist, we offer the following suggestions and help as regards the agronomic phase.

Training is generally divided into three phases: (1) Group; (2) individual "showing-how"; and (3) observing the results of previous training.

The second step is most important. Here the work unit conservationist is given help in:

1. Preparing for meeting with tne farmer or rancher.

2. Presenting all good alternatives to the farmer, from which the farmer chooses for his complete plan. The way such decisions are recorded. Here is the opportunity to help the WUC in his use of all tools and facts available to him.

3. Continuing observation or follow-up to see if he is improving or just getting back in the old familiar and comfortable rut. When the latter happens it is time for some administrative action.

4. Use of time to observe good agronomy practices applied in the land. Compliment the WUC and in unusual cases recommend commendation.

Agronomy and the Engineering and Watershed Planning Unit: D. G. Craig, John P. Jones, and Wayne W. Austin

The most effective way to get adequate consideration for land treatment measures in the watershed is during the planning stage. To do this we must rely on the soil conservationist, the work unit conservationist and the management agronomist, if available.

It is desirable to work with all sections of the EWPU. Factors that should be considered with each section, from design through economics and maintenance, include: Design and construction

1. Waterways - location; width; timeliness of construction and seeding.

2. Earthen structures (Except flood protection structures - stock water ponds)

   a. Slopes on sides

   b. Compactness

   c. Type of fill material on surface of side

   d. Fencing (as it effects revegetation).

Watershed Planning

1. At the planning stage

   a. Does the plan contain all of the needed land treatment measures?

   b. Are land treatment costs reasonable?

   c. Is the schedule of construction in line with the anticipated competition of planning and application of land treatment measures?

2. At construction stage

   a. Is the percentage acreage under the plan and the amount of application present in amounts specified by Service policy to allow beginning of construction?

   b. Is the planning and application of land treatment measures keeping pace with construction or is construction getting ahead?

Geology - Sedimentation

1. Where there is sediment - vegetation is usually involved - mostly by its absence.

2. Other factors such as salt water from oil well having a bearing.

3. Denuded range land involved.

4. Sloping farmlands with no cover are involved.

Hydrology

1. Infiltration

2. Soil condition as it relates to rate of inviltration and water filling capacity.

Economics

1. What does it cost?

2. Is it practical?

3. Do farmers think it pays?

4. Economics of watersheds - cost of land treatment measures.

   Estimated costs of establishing various practices varies widely from place to place as the local technicians often use the upper limits of seeding rates and fertilization in order to insure success. As a result, some of the costs are unrealistic.

Irrigation

1. Get enough water to plants at right time - and not too much nor too often

2. Agronomist should know root systems of plants.

3. Standards and specification of irrigation practices are of direct concern to the agronomist.

Drainage

1. Open or closed?

2. What to do with spoil banks.

3. Ditch cleaning and maintenance problems.

4. Standards and specifications?
   Might need a fluctuating water-table - gates.

The watershed work cannot be determined far enough in advance so that it can be put in the schedules. For this reason much of the early planning for vegetation treatment is left entirely to the local technician. The management agronomist's schedule is not always flexible enough for him to participate in developing the needed vegetative program in the early planning stages.

There is need for the further development of the hydrologic value of vegetation of all kinds.

Panel on improving the agronomic phase of farm and ranch planning: Panel discussion - T. C. Maurer, Leader, Chas. C. Abernathy, Maurice D. Gamble, Verle G. Kaiser, John E. Pollock, and J. W. Turelle.

Management agronomists have a responsibility to help work unit conservationists to recognize the agronomic problems, and to seek ways to solve them.

Farm and ranch planning aspects are changing, mainly because we are working with a greater percentage of farmers who have established a part of their basic conservation plans. Therefore, we are assisting them to make further improvements in their program.

There are new agricultural techniques and new cultural practices to be considered, i.e., fertilizers are just becoming a factor in some parts of the country, while in other parts new fertilizers are effecting crop rotations. New methods of tilling the soil, and managing crop residues are becoming important in the conservation of soil and water.

The various alternative methods of treating the land that will protect and maintain it, need to be discussed with the farmer. Also, field personnel need to be acquainted with the several agricultural programs available to the farmer.

It is important that the agronomic phase of the farmer's and rancher's conservation program be clearly recorded in the plan and obviously applied on the land.

General weakness in farm planning phases:

1. Land and plant capabilities not always discussed with the farmer.
2. Farmer's likes and dislikes not considered.
3. Benefits of good cropping systems not always explained.
4. Negative or lack of positive approach on part of the technician.
5. Not enough time spent on crop and pasture land phases that deal with cultural and management practices.
6. Alternate ways of treating the land not fully discussed with farmer.
7. Planned phases often represent conservationist's decisions and not those of the farmer.
8. Some plans not clearly written and often a code or check system is used in plans.

Improvements in conservation plans can be made by:

1. Checking plans in the office and field, pointing out good and poor agronomic planning. This should be done by area conservationists and their staffs sufficiently to determine that the agronomy practices are adequately recorded.

2. Giving work unit conservationists and their staffs on-site assistance with planning activities. This will help to uncover the training needs.

3. Supplying conservationists with agronomic information, local farmer experiences, and research results.

4. Encouraging conservationists to specify, simplify, and clarify farm plan write-up and make it fit the individual farm and farmer. Don't use "canned" statements, code, or check systems in preparing plans.

5. Considering not only the land and plant capabilities, but also the farmer's capabilities.

6. Discussing practices in terms of increasing farm income.

7. Determining if the planned agronomic phase conserves soil and water, builds up soil productivity, and increases farm income.

Carrying out the agronomic phase of the soil conservation program can be improved by:

1. Making sure that practices fit the land, man, equipment, and will increase farm income.

2. Making maximum use of adapted grasses and legumes.

3. Making full use of field trials and establishing examples in each community and neighborhood.

4. Giving full consideration to improving techniques with old accepted practices as well as newer practices.

5. Keeping conservationist informed on location of seed and planting stock.

6. Making full use of camera, news articles, etc.

7. Inspections.

8. "Follow-up" - visit the cooperator from time to time to encourage improvements and refinements.

The work unit conservationist may need:

1. Assistance of management agronomists to be a topnotch technician in order to get agronomic practices recorded into the farm plan and on the land. He must be sold himself.

2. To recognize the importance of planning --many regard it as a chore; not as a basic fundamental concept in a coordinated soil and water conservation job.

3. The help and support of the area conservationist and State offices in appreciating the importance of the vegetative phases of the work to discharge their responsibilities in agronomy.

4. To devote less time on application of engineering measures. This could be corrected by employing more aides.

5. To recognize the agronomic problems in the territory he serves. Conviction on the part of the work unit conservationist about agronomic problems and their solution are important.

6. Help with the type of information that will show that a practice will work, and how much it will cost and the benefit derived.

7. A new method of salesmanship that will start and complete an action on the part of the cooperator.

8. To include time for the planning and application of agronomic practices in the work load analysis.

9. To recognize the training needs of his staff with respect to agronomy.

10. To be sold himself on the value of practices.

Vegetation the backbone of soil and water conservation program: By J. K. Abernathy, Ass't State Conservationist from Virginia

1. Line officers must inaugurate and insist upon a sound application of agronomic techniques.

   a. The policy must be clear-cut in this respect.

   b. There must be an adequate staff of competent personnel.

2. Continuous training is necessary to keep field men up-to-date on agronomic information. This work should be coordinated with the land grant colleges as far as possible. Representatives of land grant colleges have been very helpful in preparing handbooks and assisting with training sessions for field

personnel, both in groups and as individuals.

3. Standards should be reasonable and specifications sufficiently flexible to allow local adaptation and to encourage the use of common sense and judgment on the part of the work unit conservationist.

4. We must help solve problems.

5. It is important to get all possible information from the farmer to be used as a basis to begin planning.

6. We must offer the farmer alternative solutions. There is seldom just one solution.

7. We must give the farmer full information on which he can make a wise decision.

8. Our suggestions must be economically sound.

9. Basic farm plans must be stressed.

10. Farm plans must be prepared thoroughly, kept simple and tailored for the individual farmer. Leave the "dress-up" out.

11. Agronomic practices, like many others, must be sold or they will never be applied.

12. In dealing with the farmer, emphasize the "what and why"; he usually knows "how."

13. Don't use "stereotyped" statements in dealing with agronomic practices.

14. Encourage flexibility in plans.

15. Management agronomists should collect benefit information of agronomic practices and prepare it into usable form for work unit conservationists and their staffs.

Slope and Practice Information: J. J. Pierre

The Cornbelt and Northeast are using slope and practice guides, based on research information, to determine rotations, and mechanical measure necessary to reduce soil losses to an allowable limit per year, usually 2 to 4 tons per year.

The formula used in preparing the guides is based on an analysis of several thousand run-off studies made in the midwest and northeast.

Factors that influence soil and water losses include type of soil, amount, intensity, and distribution of rainfall, length and steepness of slope, kind and amount of cover, crop rotation, mechanical practices, and tillage methods.